

Facility Name: **KIA Georgia, Inc.**

City: West Point

County: Troup

AIRS #: 04-13-285-00084

Application #: 642427

Date SIP Application Received: March 15, 2022

Date Title V Application Received: March 15, 2022

Permit No: 3711-285-0084-V-03-2

<b>Program</b>	<b>Review Engineers</b>	<b>Review Managers</b>
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## Introduction

This narrative is being provided to assist the reader in understanding the content of the referenced SIP permit to construct and proposed operating permit amendment. Complex issues and unusual items are explained in simpler terms and/or greater detail than is sometimes possible in the actual permit. This permit is being issued pursuant to: (1) Sections 391-3-1-.03(1) and 391-3-1-.03(10) of the Georgia Rules for Air Quality Control, (2) Part 70 of Chapter I of Title 40 of the Code of Federal Regulations, and (3) Title V of the Clean Air Act Amendments of 1990. The following narrative is designed to accompany the draft permit and is presented in the same general order as the permit. This narrative is intended only as an adjunct for the reviewer and has no legal standing. Any revisions made to the permit in response to comments received during the EPA review process will be described in an addendum to this narrative.

## I. Facility Description

### A. Existing Permits

Table 1 below lists the current Title V permit, and all administrative amendments, minor and significant modifications to that permit, and 502(b)(10) attachments.

Table 1: Current Title V Permit and Amendments

Permit/Amendment Number	Date of Issuance	Description
Permit No. 3711-285-0084-V-03-0	September 27, 2017	Title V Permit Renewal
Amendment No. 3711-285-0084-V-03-1	July 18, 2021	Name Change

### B. Regulatory Status

#### 1. PSD/NSR/RACT

KIA Georgia, Inc. (hereafter “KIA” or “facility”) is a PSD major source because it has potential to emit more than 250 tons per year (tpy) of volatile organic compounds (VOC) in Troup County. Troup County is classified as “attainment” for SO<sub>2</sub>, PM<sub>2.5</sub>, PM<sub>10</sub>, NO<sub>x</sub>, CO, and ozone (VOC).

When KIA submitted Application No. 17363 for the construction and operation of the greenfield passenger vehicle assembly plant, the greenfield plant was a major source for volatile organic compounds (VOC) by itself. Potential emissions of particulate matter (PM/PM<sub>10</sub>) and nitrogen oxides (NO<sub>x</sub>) from the greenfield plant exceeded the associated PSD Significant Emission Rates. Therefore, the facility underwent a PSD review for VOC, NO<sub>x</sub>, and PM/PM<sub>10</sub>. The resulting best available control technology (BACT) limits are included in Conditions 3.2.1 through 3.2.17 of the current permit.

Since Troup County is in an attainment area for all criteria pollutants, non-attainment area new source review (NAA NSR) is not applicable to the facility.

Troup County is not in any of the county list in GA Rule (tt) and (yy); therefore, the facility is not subject to any reasonably available control technology (RACT) requirements.

#### 2. Title V Major Source Status by Pollutant

Table 2: Title V Major Source Status

Pollutant	Is the Pollutant Emitted?	If emitted, what is the facility’s Title V status for the Pollutant?		
		Major Source Status	Major Source Requesting SM Status	Non-Major Source Status
PM	✓			✓
PM <sub>10</sub>	✓			✓
PM <sub>2.5</sub>	✓			✓
SO <sub>2</sub>	✓			✓

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VOC	✓	✓		
NO <sub>x</sub>	✓	✓		
CO	✓			✓
TRS	✓			✓
H <sub>2</sub> S	✓			✓
Individual HAP	✓	✓		
Total HAPs	✓	✓		
Total GHG	✓			✓

## II. Proposed Modification

### A. Description of Modification

This application requests to construct and install a second regenerative thermal oxidizer (RTO-2) and will handle the exhaust flow from all five ovens (OEE, OUU, OSS, OT-1 and OT-2). The two existing clearcoat booths will remain ducted to the existing RTO. To create redundancy and flexibility for production with the two oxidizers, the facility is requesting the ability to route the exhaust flow such that if RTO or RTO-2 becomes inoperable, the exhaust flowing to either oxidizer can be routed to the other. If RTO is inoperable, RTO-2 would collect exhaust from the five ovens as well as the two clear coat booths. If RTO-2 is inoperable, RTO would collect exhaust from the two clear coat booths as well as the five ovens.

Three existing ovens will also be modified by replacing or adding burners (OEE, OUU and OSS). Currently, the OEE has two 3.15 MMBtu per hour (hr) burners, four 1.6 MMBtu/hr burners and one 2.5 MMBtu/hr burner, for a total burner rating of 15.2 MMBtu/hr. This application proposes to replace one of the 3.15 MMBtu/hr burners with a 4.48 MMBtu/hr burner and add an additional 2.5 MMBtu/hr burner to OEE. This will increase the total burner rating for OEE from 15.2 MMBtu/hr to 19.03 MMBtu/hr and cause the total exhaust flow to increase from 11,301 cubic feet per minute (cfm) to 21,542 cfm. The OUU currently operates with one 2.5 MMBtu/hr burner, two 1.6 MMBTU/hr burners, and one 1.35 MMBtu/hr burners, for a total burner rating of 7.05 MMBtu/hr. This application proposes to replace the 1.35 MMBtu/hr burner with a 2.5 MMBtu/hr burner for OUU. This will increase the total burner rating for OUU from 7.05 MMBtu/hr to 8.2 MMBtu/hr and cause the exhaust fan flow to increase from 5,650 cfm to 8,299 cfm. This application proposes to replace the current 2.5 MMBtu/hr burner on the OSS with a 3.5 MMBtu/hr burner; this is a 1 MMBtu/hr increase in the total burner rating for OSS.

### B. Emissions Change

The emissions for the existing and planned units were estimated using the maximum heat input for each unit, AP-42 emission factors for natural gas combustion and an emission factor of 0.09 lbs of NO<sub>x</sub>/MMBtu for the emissions from the ovens and regenerative thermal oxidizers due to NO<sub>x</sub> BACT requirements.

A public advisory (PA0322-3) was issued on March 16, 2022 and expired on April 15, 2022. No comments were received.

**Table 3: Emissions Change Due to Modification**

Pollutant	Is the Pollutant Emitted?	Net Actual Emissions Increase (Decrease) (tpy)	Net Potential Emissions Increase (Decrease) (tpy)
PM	✓	0.82	0.82
PM <sub>10</sub>	✓	0.82	0.82
PM <sub>2.5</sub>	✓	0.82	0.82
SO <sub>2</sub>	✓	0.06	0.06
VOC	✓	0.59	0.59
NO <sub>x</sub>	✓	9.85	9.85
CO	✓	9.01	9.01

**Table 3: Emissions Change Due to Modification**

<b>Pollutant</b>	<b>Is the Pollutant Emitted?</b>	<b>Net Actual Emissions Increase (Decrease) (tpy)</b>	<b>Net Potential Emissions Increase (Decrease) (tpy)</b>
TRS	No	--	--
H <sub>2</sub> S	No	--	--
Individual HAP	✓	0.19	0.19
Total HAPs	✓	0.20	0.20

The potential emission rate for all HAP/TAP were evaluated to determine if a toxic impact assessment was necessary. All of the pollutants emission rates were evaluated to the MER (minimum emission rate) located in Appendix A for the Georgia Air Toxics Guidelines. A summary of the MER for the pollutants is shown in the table below. The emission rates for arsenic, cadmium and chromium exceeded the MER; therefore, a TIA was required for these pollutants. Because all of the other pollutants emission rates were below the MER, a toxic impact assessment was not necessary for these pollutants.

<b>Pollutant</b>	<b>CAS</b>	<b>Emission Rate (lb/yr)</b>	<b>MER (lb/yr)</b>	<b>Modeling Required?</b>
Arsenic	7440-38-2	4.69E-01	5.67E-02	Yes
Benzene	71-43-2	4.92	3.16E+01	No
Beryllium	7440-41-7	2.81E-02	9.73E-01	No
Cadmium	7440-43-9	2.58	1.35	Yes
Chromium	7440-47-3	3.28	2.02E-02	Yes
Cobalt	7440-48-4	1.97E-01	1.17E+01	No
Copper	7440-50-8	1.99	1.17E+02	No
Formaldehyde	50-00-0	1.76E+02	2.67E+02	No
Hexane	110-54-3	4.22E+03	1.70E+05	No
Lead	7439-92-1	1.17	5.84	No
Manganese	7439-96-5	8.91E-01	1.22E+01	No
Mercury	7439-97-6	6.09E-01	7.30E+01	No
Molybdenum	7439-98-7	2.58	1.74E+03	No
Naphthalene	91-20-3	1.43	7.30E+02	No
Nickel	7440-02-0	4.92	3.86E+01	No
Pentane	109-66-0	6.09E+03	3.42E+05	No
Propane	74-98-6	3.75E+03	2.09E+05	No
Selenium	7782-49-2	5.63E-02	2.34E+01	No
Toluene	108-88-3	7.97	1.22E+06	No

SCREEN 3 was used to model arsenic, cadmium and chromium emissions. The E-Coat oven stack from the paint shop has the shortest height and lowest velocity, which makes it the stack to use for a worst-case modeling scenario with the assumption that all emissions come from this stack. The following table shows the SCREEN 3 results. Please note that chromium (VI, mist) does not have any 15-min AAC available. The maximum ground level concentrations were below the acceptable ambient concentrations; therefore, the TIA passed the evaluation. It is noted that the facility used AP-42 emission factor for chromium (total chromium) to calculate Cr VI emissions. SCREEN3 passed using the more conservative amount of chromium, rather than the emissions from chromium VI.

<b>Pollutant</b>	<b>Averaging Period</b>	<b>AAC (<math>\mu\text{g}/\text{m}^3</math>)</b>	<b>MGLC (<math>\mu\text{g}/\text{m}^3</math>)</b>	<b>Averaging Period</b>	<b>AAC (<math>\mu\text{g}/\text{m}^3</math>)</b>	<b>MGLC (<math>\mu\text{g}/\text{m}^3</math>)</b>
Arsenic	Annual	2.33E-04	9.25E-06	15-min	0.2	1.53E-04
Cadmium	Annual	5.56E-03	5.09E-05	15-min	30	8.39E-04
Chromium (VI)	Annual	8.30E-05	6.47E-05	15-min	No Data	--

### C. PSD/NSR Applicability

The facility is a PSD major source because it has potential to emit more than 250 tons per year (tpy) of volatile organic compounds (VOC) in Troup County. Troup County is classified as “attainment” for all criteria pollutants.

The baseline actual emissions to future potential emissions for this project were compared to the significance level for each pollutant. As shown in Table 3, the emission increases are all below the respective PSD significance level, a PSD review was not necessary for this application.

**III. Facility Wide Requirements**

**A. Emission and Operating Caps**

There are no changes to facility wide emission and operating caps due to this application.

**B. Applicable Rules and Regulations**

There are no changes to the facility-wide rules and regulations due to this amendment.

**C. Compliance Status**

There are no facility-wide compliance issues noted with this application.

**D. Permit Conditions**

No changes to the facility-wide permit conditions were required for this amendment.

#### IV. Regulated Equipment Requirements

##### A. Brief Process Description

KIA assembles passenger vehicles from steel blanks that are stamped and molded to form the various body parts and then constructed using preassembled vehicle parts. The facility currently has a production capacity of 370,000 vehicles per year. The plant consists of four main manufacturing centers: Press Shop, Body Shop, Paint Shop, and Assembly Shop.

In the Press Shop, sheet metal is feed to the various stamping machines to form the body parts. There are no air emissions from this portion of the plant.

In the Body Shop, the individual frame and body parts are welded together primarily using robotic arc welders. Some parts have sound deadeners or lubricants added during the part fabrication. Collection hoods over the various welding areas allow the welding emissions to be vented through stacks to the atmosphere. Next, the assembled vehicle body, which is called “body-in-white” is sent to the Paint Shop.

In the Paint Shop, the body-in-white is cleaned using phosphate cleansers, then the entire body is primed using an electrodeposition coating system (E-Coat). The body is then sent through a series of robotic spray booths – first the topcoat primer, then the actual basecoat, and finally the clearcoat. There are three touch up booths and various sanding booths. Emissions from the spray booths are controlled with Venturi scrubbers to remove particulates. Emissions from the clear coat booth are also controlled with Venturi Scrubbers and then vented to the Regenerative Thermal Oxidizer (RTO). All of the bake ovens are vented to an RTO.

In the Assembly Shop, parts modules, subassemblies, and trim parts are assembled onto the painted body. After that, the operating fluids are added, and the assembled vehicle is tested, adjusted to specification, and repaired as needed. KMMG does not manufacture engines for the vehicles. They are brought on-site preassembled. The vehicle is tested on a dynamometer before being sent to adjacent Vehicle Processing Center (VPC) for preparation to be shipped off-site.

The Vehicle Processing Center (VPC) has two minor emission sources. A low VOC water-based underbody coating is applied for long term corrosion protection. Also, at VPC, the vehicles are inspected again for paint defects. Bodies with defects are spot sanded and the paint repaired. Minor paint repairs are accomplished in the touch up spray booth.

##### B. Equipment List for the Process

Emission Units		Specific Limitations/Requirements	Air Pollution Control Devices	
ID No.	Description	Applicable Requirements/Standards	ID No.	Description
<b>E-Coat Operations</b>				
EEE	E-Coat Main Dip (electrodeposition of waterborne primer coating)	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(t) PM BACT limit of 0.0015 gr/dscf 40 CFR 63, Subpart IIII 40 CFR 60 Subpart MM	--	--



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Emission Units		Specific Limitations/Requirements	Air Pollution Control Devices	
ID No.	Description	Applicable Requirements/Standards	ID No.	Description
OEE	E-Coat Oven (direct fired)	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(g) NO <sub>x</sub> BACT limit of 0.09 lb/MMBtu heat input	RTO/ RTO2	Regenerative Thermal Oxidizers
<b>Guide Coat (Primer) Operations</b>				
BSS	Guide Coat (Primer) Spray Booth	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(t) PM BACT limit of 0.0015 gr/dscf 40 CFR 63 Subpart IIII 40 CFR 60 Subpart MM	SPS1	Venturi Scrubber
OSS	Guide Coat (Primer) Oven (indirect fired)	391-3-1-.02(2)(d) 391-3-1-.02(2)(g) NO <sub>x</sub> BACT limit of 0.09 lb/MMBtu heat input 40 CFR 63 Subpart DDDDD	RTO/ RTO2	Regenerative Thermal Oxidizers
<b>Top Coat 1 Operations</b>				
BT1B	Topcoat #1 Basecoat Spray Booth	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(t) PM BACT limit of 0.0015 gr/dscf 40 CFR 63 Subpart IIII 40 CFR 60 Subpart MM	SBS1,	Venturi Scrubber
FT1	Topcoat #1 Flash Heater (indirect fired)	391-3-1-.02(2)(d) 391-3-1-.02(2)(g) NO <sub>x</sub> BACT limit of 0.09 lb/MMBtu heat input 40 CFR 63 Subpart DDDDD	--	--
BT1C	Topcoat #1 Clearcoat Spray Booth	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(t) PM BACT limit of 0.0015 gr/dscf 40 CFR 63 Subpart IIII 40 CFR 60 Subpart MM	SCS1  RTO/ RTO2	Venturi Scrubber  Regenerative Thermal Oxidizers
OT1	Topcoat #1 Oven (indirect fired)	391-3-1-.02(2)(d) 391-3-1-.02(2)(g) NO <sub>x</sub> BACT limit of 0.09 lb/MMBtu heat input 40 CFR 63 Subpart DDDDD	RTO/ RTO2	Regenerative Thermal Oxidizers
<b>Top Coat 2 Operations</b>				
BT2B	Topcoat #2 Basecoat Spray Booth	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(t) PM BACT limit of 0.0015 gr/dscf 40 CFR 63 Subpart IIII 40 CFR 60 Subpart MM	SBS2	Venturi Scrubber
FT2	Topcoat #2 Flash Heater (indirect fired)	391-3-1-.02(2)(d) 391-3-1-.02(2)(g) NO <sub>x</sub> BACT limit of 0.09 lb/MMBtu heat input 40 CFR 63 Subpart DDDDD	--	--
BT2C	Topcoat #2 Clearcoat Spray Booth	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(t) PM BACT limit of 0.0015 gr/dscf 40 CFR 63 Subpart IIII 40 CFR 60 Subpart MM	SCS2  RTO/ RTO2	Venturi Scrubber  Regenerative Thermal Oxidizers
OT2	Topcoat #2 Oven (indirect fired)	391-3-1-.02(2)(d) 391-3-1-.02(2)(g) NO <sub>x</sub> BACT limit of 0.09 lb/MMBtu heat input 40 CFR 63 Subpart DDDDD	RTO/ RTO2	Regenerative Thermal Oxidizers
<b>Underbody Operations</b>				

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Emission Units		Specific Limitations/Requirements	Air Pollution Control Devices	
ID No.	Description	Applicable Requirements/Standards	ID No.	Description
BUU	Underbody Sealer Booth	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(t) PM BACT limit of 0.0015 gr/dscf 40 CFR 63 Subpart IIII	FUB1	Dry Filter
OUU	Underbody Sealer Oven (direct fired)	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(g) NO <sub>x</sub> BACT limit of 0.09 lb/MMBtu heat input	RTO/ <b>RTO2</b>	Regenerative Thermal Oxidizers

\* Generally applicable requirements contained in this permit may also apply to emission units listed above. The lists of applicable requirements/standards and corresponding permit conditions are intended as a compliance tool and may not be definitive.

\* **Modified or new units are in bold.**

### C. Equipment & Rule Applicability

- Emission and Operating Caps – There are no additional emission and operating caps necessary for this application.
- Applicable Rules and Regulations -

#### Rules and Regulations Assessment:

The direct fired ovens will continue to be subject to Georgia Rule (b) - *Visible Emissions*, Georgia Rule (e) - *Particulate Emission from Manufacturing Processes* and Georgia Rule (g) – *Sulfur Dioxide*. Because all fuel burning sources combust natural gas, the facility will be inherently in compliance with this rule.

Ovens OEE, OUU and OSS will continue to be subject to the BACT NO<sub>x</sub> limit of 0.09 lb/MMBtu which was conducted in Application No. 17363 (Permit No. 3711-285-0084-P-01-0).

The existing RTO and the proposed RTO will continue to be subject to the BACT requirement of a 95% destruction efficiency for the emission units vented to the RTO(s). This BACT requirement was established in Application No. 17363 (Permit No. 3711-285-0084-P-01-0).

#### Emission and Operating Standards:

There are no additional emission and operating standards for this modification.

### D. Permit Conditions

- Condition 3.2.2 is a BACT limit requiring 95% destruction efficiency from the RTO. This condition was modified to include RTO2. The facility can use either RTO to control emissions.
- Condition 3.3.4 establishes control devices operating standards from 40 CFR 63 Subpart IIII and was modified to include RTO2.

**V. Testing Requirements (with Associated Record Keeping and Reporting)**

- Condition 4.2.4 is a new condition which requires an initial VOC destruction efficiency performance test for RTO2 and subsequent performance tests every 60 months.
- Condition 4.2.5 is a new condition which requires performance tests every 60 months (5 years) to determine the capture efficiency of each capture system exhausting to RTO2.
- Condition 4.2.6 is a new condition which requires a NOx performance test on at least one of the ovens (OEE, OSS, and OUU) to demonstrate compliance with the NOx BACT limit. This NOx test is required because the oven's burners will be changed.

**VI. Monitoring Requirements** (with Associated Record Keeping and Reporting)

- Conditions 5.2.1 and 5.2.2 require continuous parameter monitoring systems (CPMS) for the RTO gas/combustion temperature and each capture system feeding the RTO as required for the monitoring requirements of 40 CFR 63 Subpart IIII. These conditions were modified to include RTO2.

**VII. Other Record Keeping and Reporting Requirements**

- Condition 6.1.7c.i. was modified to include that the excursion is applicable to times when the RTO is being used to control emissions.
- Condition 6.1.7c.vii. is a new condition which requires an excursion report for any three-hour period where the average gas stream/combustion temperature of regenerative thermal oxidizer RTO2 is lower than the temperature established. Like Condition 6.1.7c.i., the excursion is only applicable to times when RTO2 is being used to control emissions.
- Condition 6.2.4 contains the applicable equations and/or approaches to calculate VOC emissions for compliance with Georgia Rule (t). The condition was modified to include RTO2.
- Condition 6.2.7 contains the applicable equations and/or approaches to calculate VOC emissions for compliance with 40 CFR 60 Subpart MM. The condition was modified to include RTO2.
- Condition 6.2.8 detail the reporting requirements to demonstrate compliance with 40 CFR 60 Subpart MM. The condition was modified to include RTO2.
- Conditions 6.2.43 and 6.2.45 detail the record keeping requirements to demonstrate ongoing compliance with the VOC BACT limits and the facility wide VOC limit. These conditions were modified to include RTO2.

**Addendum to Narrative**

The 45-day EPA review started on month day, year and ended on month day, year. Comments were/were not received by the Division.

//If comments were received, state the commenter, the date the comments were received in the above paragraph. All explanations of any changes should be addressed below.//